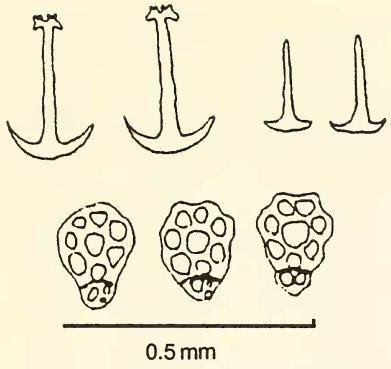

Fig. 2: Spicules of *Euapta godeffroyi*

Description: Length of live specimen 1.75 m, 40 cm when contracted. Body is soft, sticky flexible and highly extensible. 18 pinnule tentacles with digits united by a web in each tentacle. Body surface covered with several rows of closely packed white papillae, giving it a striped appearance. Gonads consist of a number of tubules.

Pale brown in colour with large dark brown bands, equally spaced across the dorsal side. Ventral side pale brown. Spicules present as anchors and anchor plates. Anchor plates narrow at posterior end, more or less circular with about 7 large holes and 3 small holes at the handle side. There is an identical bridge near the handle for the attachment of the anchor. Anchors small, on the vertex of the anchor are two dents. Flukes of the anchor smooth and of equal size (Fig. 2).

Habitat: Sea grass beds, coral boulders.

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REFERENCES

JAMES, D.B. (1969): Catalogue of echinoderms in the reference collections of the Central Marine Fisheries Research Institute. *Bull. Cent. Mar. Fish. Res. Inst. 7*: 61-62.

JAMES, D.B. (1983): Sea cucumbers and sea urchin resources and *beche de mer* industry. *In*: Mariculture potential of Andaman and Nicobar Islands — an indicative survey. *CMFRI Bull. 34*: 36-43.

KOEHLER, R. & C. VANEY (1908): Echinoderms of the Indian Museum Part IV. An account of the littoral Holothuroidea collected by the R.I.M.S. *Investigator*, 55 pp. Calcutta.

KULKARNI S.A. (1996): The holothurian fauna of Agatti atoll (Lakshadweep, India). M.Sc. thesis submitted to Goa University, Goa, pp. 1-56.

SHASTRY, D.R.K. (1998): Some Echinoderms new to Mahatma Gandhi Marine National Park with two new records for India. *In*: Sym. Proc. Islands Ecosystem & Sustainable Development (Eds: Gangwar, B. & K. Chandra). Publ. by Andaman Sci. Assoc. and Dept of Science & Technology, A & N Administration, Port Blair: 133-138.

THEEL, H. (1882): Report on the holothurians dredged by H.M.S. *Challenger. Zool. 7*: 1-176.

28. NEW RECORD OF *MACROBRACHIUM DAYANUM* HENDERSON, 1893 FROM A FRESHWATER ECOSYSTEM OF TRIPURA, INDIA

(*With one plate*)

Studies on prawns are important from an aquaculture view point (Thakur *et al.* 1994, ASFA 1998). Knowledge of their ecological niche conditions is also needed to clearly record

the nature of their distribution, (FAO 1985, Qureshi 1994, ASFA 1998).

A description of *Macrobrachium dayanum* Henderson 1893, with its niche characteristics, i.e. physico-chemical factors of water, occurrence of several phyto- and zooplanktonic food biota, preference for macrophyte substrata and seasonal abundance of *M. dayanum* are given.

This work was carried out in a freshwater wetland ecosystem in Agartala (23° 50' 15" N, 90° 15' 45" E), Tripura, from March 1996 to February 1998. The mean depth of the study site varied from 0.63 ±30 cm during winter to 130 ±33 cm in monsoon. The littoral zone supports a number of macrovegetation species. Fish are cultured in this wetland by stocking with fry and fingerlings of Indian major carps for a seasonal period.

This study is based on live specimens of *M. dayanum* collected weekly from the roots of the hydrophytes in the littoral zone.

Samples of plankton and water were collected from the periphery of the prawn sampling zones. Physico-chemical parameters of water, i.e. temperature, transparency, pH, free carbon dioxide, dissolved oxygen, bicarbonate, dissolved organic matter, chlorinity, salinity, silicate, phosphates and nitrates were analysed adopting the methodology of APHA (1995). The physico-chemical parameters data were pooled into a mean value (Table 1) describing the limnological feature of the studied wetland. The works of Ling (1969), Kurian and Sebastian (1986) and Jalihal *et al.* (1988) were consulted for taxonomic identification of the prawns.

Rostrum curved upwards, rostral formula 9/6 (dorsal / ventral) in most cases and 8-9 / 5-6 in a few individuals; arrangement of dorsally placed rostral teeth not uniform; 5th walking legs of the same length as the fourth; 2nd chelae of adult male equal or subequal; fingers of the 2nd chelae grooved longitudinally with velvety hairs in the groove; walking legs covered with velvety hairs; walking legs as well as dorsal body surface with brown stripes; eggs brownish, small (<0.70 mm) (Plate 1, Fig. 1)

TABLE 1
PHYSICO-CHEMICAL CHARACTERISTICS OF THE FRESHWATER WETLAND

Physico-chemical factors	Range	Mean	±S.D.
Water temperature (°C)	15-30	24.5	5.12
Transparency (cm)	13-19	16.33	2.42
pH	7.4-7.6	7.46	0.07
Bicarbonate (ppm)	106-127	118.33	7.52
Dissolved oxygen (ppm)	5-7	6.16	0.68
Silicate (ppm)	4-8	5.83	1.34
Chlorinity (ppm)	10-30	20.00	8.16
Salinity (ppt)	0.01-0.03	0.02	0.01
Phosphates (ppm)	0.3-0.4	0.35	0.05
Nitrates (ppm)	0.3-0.4	0.33	0.04

Body length (male)	=	4.9-7.8 cm
Body length (female)	=	4.5-6.4 cm
Body width (proximal)	=	0.7-1.2 cm
Body width (distal)	=	0.2-0.4 cm
Length of 2nd walking leg	=	2.3-4.0 cm

Phytoplankton: The dominant phytoplanktonic species were *Chlorella vulgaris*, *Cymbella*, *Ceratium hirundinella*, *Nietzschia commutata*, *Euglena acus*, *Phacus pleuronectes* etc. Of these, *Chlorella vulgaris* was the most dominant. The peak abundance of the algae was in winter.

Zooplankton: Rotifers (*Brachionus*, *Keratella*, *Lecane*, *Euchlanis*), Cladocerans (*Ceriodaphnia*, *Bosmina*) and Copepods (*Cyclops*, *Eucyclops*) were recorded. Of these, rotifers were dominant both qualitatively as well as quantitatively. Among all genera, *Brachionus* was the most dominant. The peak abundance of rotifers was in winter.

Preference for plant substrata: Although *M. dayanum* was observed all along the periphery of *Ipomea aquatica* and *Eichhornia crassipes*, maximum density (65 individuals per litre of water) was recorded from the roots of the latter.

Seasonal abundance of prawn: During the two-year study period, *M. dayanum* exhibited highest density in winter and lowest in summer.

Banik, S. *et al.*: *Macrobrachium dayanum* PLATE 1

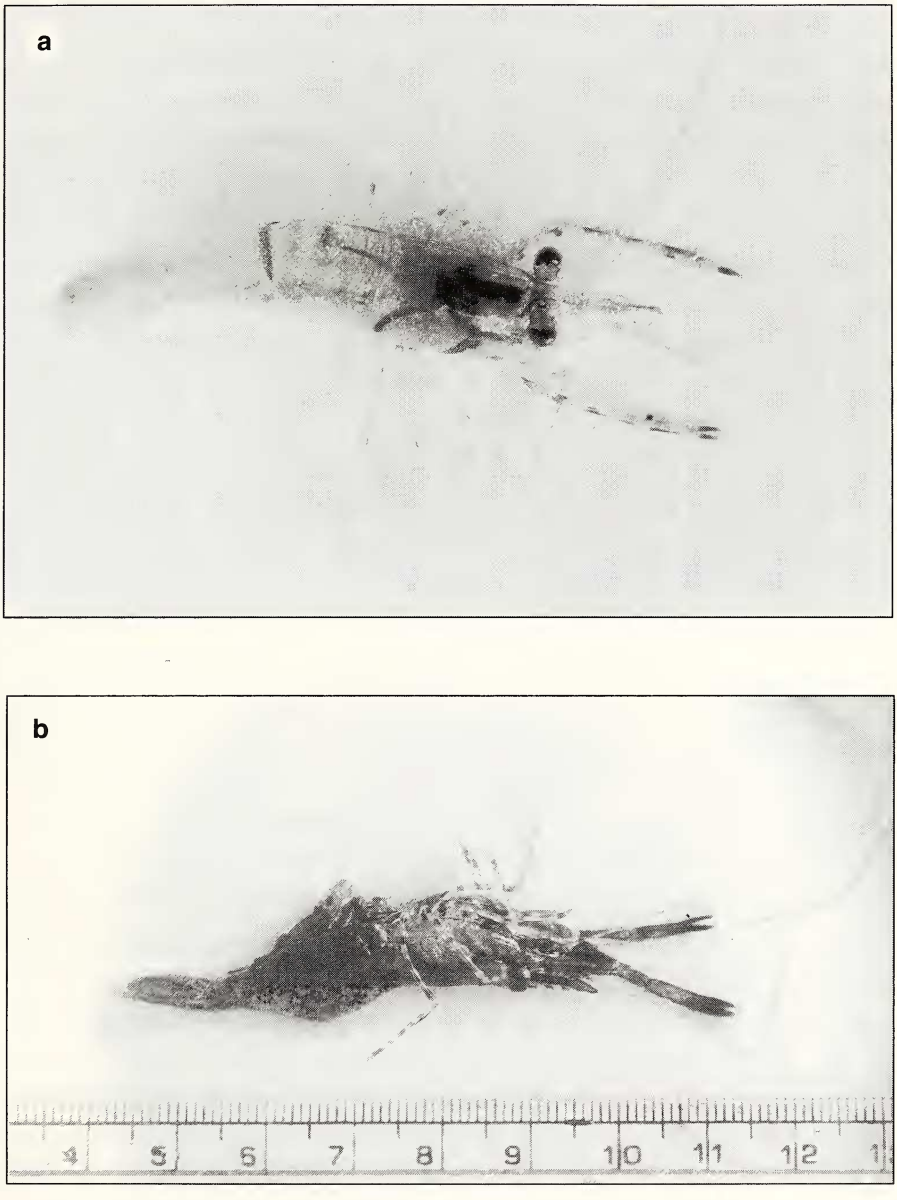

Fig. 1: *Macrobrachium dayanum* a. Male, b. Female

The prawn species occurred under certain limnological conditions which shows that it is highly specific in regard to seasonal abundance and species specific in regard to substrata selection (Banik 1996). Though recorded in a freshwater lentic ecosystem in the present study, *M. dayanum* Henderson, 1893, is basically of marine origin and probably entered freshwater habitat by migrating via a riverine system (Tiwari 1955, Kurian and Sebastian 1986). Though it was known earlier from some states of India (Tripathi 1992, De 1996), it is reported here from Tripura and also from northeast India (ASFA 1998) for the first time. This report also confirms its cosmopolitan distribution (FAO 1985, Thakur *et al.* 1994, ASFA 1998).

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REFERENCES

APHA (1995): Standard methods for the examination of water and waste water. American water works Association and water pollution control Federation, Washington.

ASFA (1998): Aquatic sciences & fisheries abstract, FAO, Rome.

BANIK, S. & S. KAR (1995): New records of sessile rotifers from freshwater fishponds of Tripura. *Proc. Indian Nat. Sci. Acad B 61(3)*: 225-230.

BANIK, S. (1996): New records of sessile rotifers from freshwater fish ponds of Tripura, II. *Proc. Indian Nat. Sci. Acad B 62(2)*: 111-116.

DE, D.K. (1996): Identifying characters, morphology and life cycles of commercially important freshwater prawn *Macrobrachium rosenbergi*. Special Publ. CICFRI, 8-19.

FAO (1985): A bibliography of the fishery resources of the Indo-Pacific region. *FAO Fish. Circ. 785,* FAO, Rome.

JALIHAL, D.R., S. SHENOY & K.N. SANKOLLI (1988): Freshwater prawns of the genus *Macrobrachium* Bate. 1868 (Crustacea, Decapoda, Palaemonidae) from Karnataka, India. *Rec. zool. Surv. India, Occ. paper No. 112*: 7-74.

KURIAN, C.V. & V.O. SEBASTIAN (1986): Prawns and prawn fisheries of India. Hindustan Publishing Corp. (India), Delhi, 297 pp.

LING, S.W. (1969): The general biology and development of *Macrobrachium rosenbergi* (De Man). *FAO Fisheries report 57(3)*: 589-606.

QURESHI, T.A. (1994): Results of studies on freshwater prawns farming in India. AFSIB, Special Publ No. 10, Mangalore, 43-48.

TIWARI, K.K. (1955): Distribution of the Indo-Burmese freshwater prawns of the genus *Palaemon* (Fabr.) and its bearing on the Satpura hypothesis. *In*: Symposium on Organic Evolution. *Bull. Nat. Inst. Sci. India 7*: 230-239.

THAKUR, N.K., R. TIWARI & M.M. JOSEPH (1994): Freshwater prawn farming in India. AFSIB Special Publ. No. 10, Mangalore, 113, pp.

TRIPATHI, S.D. (1992): Status of freshwater prawn fishery and farming in India. *In*: Silas, E.G. (Ed.), Freshwater prawns. Kerala Agri. University. Pp. 42-49.

29. THE GASTROPOD *STENOTHYRA ORNATA* ANNANDALE AND PRASHAD 1921, A NEW RECORD FROM RIVER GANGA IN BIHAR

(*With one text-figure*)

The gastropod *Stenothyra ornata* Annandale and Prashad 1921, originally known from a brackish-water pool near Calcutta, has been recorded for the first time from the